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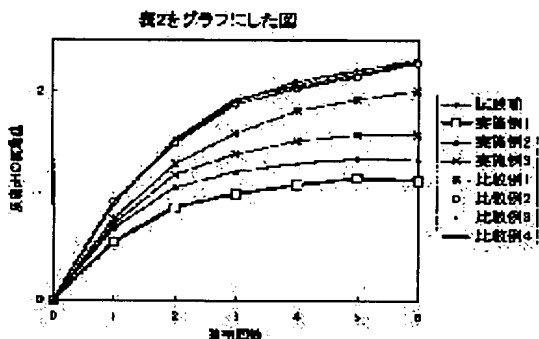
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(54) COSMETIC COMPOSITION, AND FACE-WASH, PACK PREPARATION
AND BATH PREPARATION EACH COMPRISING THE COMPOSITION

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a cosmetic composition giving the skin surface a smooth touch without excessively removing essential proteins on the epidermis, efficiently removing dirt on the epidermal surface (epidermal corneous layer), and exhibiting the effects of preventing and ameliorating wrinkles, flecks (pigment spots), and rough skin, inducing no deterioration of prophylactic or immunological functions against external excitation, and affording the skin a beautifying effect.



SOLUTION: This cosmetic composition is

obtained by homogeneously blending papaya powder treated with papain as a protease having a proteolytic activity of at least 40,000 Pa.U.N./g and maca powder treated with the papain with a substantially moisture-free powder or an oily liquid and the papain.

Claims

1. A cosmetic composition characterized in that it is obtained by homogeneously blending papaya powder treated with papain as a protease and maca powder treated with the papain with a substantially moisture-free powder or an oily liquid and the papain.
2. A face-wash characterized by comprising a cosmetic composition obtained by homogeneously blending papaya powder treated with papain as a protease having a proteolytic activity of at least 40,000 Pa.U.N./g and maca powder treated with said papain with substantially a moisture-free powder or an oily liquid and said papain, wherein said papain is obtained by purifying a secreted latex from an under-ripe papaya.
3. A pack preparation characterized by comprising a cosmetic composition obtained by homogeneously blending papaya powder treated with papain as a protease having a proteolytic activity of at least 40,000 Pa.U.N./g and maca powder treated with said papain with a substantially moisture-free powder or an oily liquid and said papain, wherein said papain is obtained by purifying a secretion secreted latex an under-ripe papaya.
4. A bath preparation characterized by comprising a cosmetic composition obtained by homogeneously blending papaya powder treated with papain as a protease having a proteolytic activity of at least 40,000 Pa.U.N./g and maca powder treated with said papain with a substantially moisture-free powder or an oily liquid and said papain, wherein said papain is obtained by purifying a secreted latex from an under-ripe papaya.

Detailed description of the invention

Technical field to which the invention pertains

The present invention pertains to the technical field of a cosmetic composition and a face-wash, a pack preparation and a bath preparation each comprising the composition, the composition containing papain powder, maca powder, and papain as major constituents.

Prior art

Generally, a healthy and beautiful skin is said to be moderately moisturized, lush, fresh, soft, and supple; ruddy, glossy, and firm; or porcelain-white and clear. When skin has aged, the aged skin has gradually lost such properties. Therefore, people take measures to prevent their skins from aging by using cosmetics in order to prevent wrinkles, fleckles and rough skin. Wrinkles are v-shape valleys which are irreversibly generated from the epidermis to the dermis due to the loss of elasticity or softness caused by dry skin, a decrease in the activity of skin cells, disorderly regeneration of skin, or deterioration of materials relevant to elasticity or softness such as collagen in the dermis induced by UV exposure. Wrinkles around the eyes which develop at a relatively early age are thought to be caused by the facts that the skin in this region has a tendency to be dry because the amount of sebum secretion there is small, that the skin has a tendency to be affected by external factors because the skin is relatively thin, and that the skin is apt to be deteriorated mechanically because of blinking. As mentioned above, there are many factors that induce wrinkles, and these make it difficult to solve the problem of wrinkles. It is a conventional countermeasure against wrinkles to use a face-wash containing a protease which degrades and eliminates discarded proteins on the epidermal surface.

Although flecks can be defined as deposition and diffusion of melanin pigments in the epidermis and the dermis mainly caused by UV exposure, when and where flecks occur depend on the person, because complex factors inside and outside the body are involved in the generation of flecks. Therefore, the first countermeasure in cosmetics against flecks is to contain a component that has a repressor function against a tyrosinase which is connected with biosynthesis of melanin pigments and/or to contain a component that has an antioxidative potency to repress the biosynthesis reaction of melanin pigments, which are products of an oxidation reaction. This is why conventional cosmetics to prevent

and ameliorate flecks have contained an essence from a placenta, arbutin glycoside, and/or kojic acid as components having a repressor function against tyrosinase; vitamin E, derivatives of rutin, and/or beta-carotene as components having an antioxidative potency to repress the biosynthesis reaction of melanin pigments which are products of an oxidation reaction; and vitamin C and/or its derivatives as components having a reducing function.

Rough skin can be thought of as a signal of danger by the skin, which has a role to protect the human body against physical and/or chemical stimulation. Nevertheless, rough skin is often overlooked because it can be spotted and treated easily. However, rough skin is not a trivial symptom of the epidermis surface. When a moisturizing function on the epidermis and/or the balance of oil and moisture content are lost from any cause, the activity of skin cells decreases, regeneration of skin disorders, and bumps and grooves in the skin, i.e., the texture of the skin which had a regular shape gradually becomes disordered. Because these phenomena are considered factors for the generation of wrinkles and flecks, they soon produce wrinkles and flecks. The inventors of the present invention have already proposed a cosmetic composition containing an extract from Japanese basil and papain, and a pack preparation and a bath preparation having the composition in Japanese Patent Application 2000-152068.

Problem to be solved by the invention

Because the above-described face-wash containing a protease which had the ability to degrade and eliminate discarded proteins on the epidermal surface could produce a smooth skin, it was so convenient that users of the face-wash could achieve a smooth touch just after washing. However, there was the problem that the face-wash might physically remove not only dirt on the epidermal surface but also essential proteins, which would cause a deficiency of prophylactic or immunological functions against external stimulation. Regarding flecks, cosmetics containing an essence of a placenta seemed to be effective in preventing and ameliorating flecks to a certain extent, but they had the problem that the level of reduction, diminution, and elimination of flecks of a user who used the composition continuously might not exceed the effect of autopurification caused by normal regeneration of skin cells of the user. In addition, regarding rough skin, obvious causes of rough skin for a user could not be found in many cases because the causes varied over a wide range and

hence were the most difficult to determine. This is why there were problems that the effectiveness of using cosmetics for rough skin was reduced due to this difficulty and that the cosmetics sometimes worked negatively.

The present invention was achieved in the light of the above problems. The aim of the invention is to provide a cosmetic composition and a face-wash, a pack preparation, and a bath preparation each comprising the composition, which can prevent and ameliorate wrinkles to increase the elasticity and firmness of the skin, prevent and ameliorate flecks to increase the clearness of the skin, and prevent and ameliorate rough skin to increase the moisture content of the skin. The aim of the invention from another view point is to provide a cosmetic composition containing a protease that can provide a smooth touch to the skin surface, that can efficiently remove dirt on the epidermal surface (epidermal corneous layer), without excessively removing essential proteins, and that does not induce any deterioration of prophylactic or immunological functions against external excitation. The purpose of the present invention is also to provide a cosmetic composition that contains a component which has a reducing function to prevent diffusion of melanin pigments and a component which has an antioxidative potency to repress the biosynthesis reaction of melanin pigments; and that has promise for increasing the activity of skin cells, relieving dry skin, and beautifying the skin.

Means for solving problem

In order to achieve the above objects, the invention of claim 1 is a cosmetic composition characterized in that it is obtained by homogeneously blending papaya powder treated with papain as a protease and maca powder treated with the papain with a substantially moisture-free powder or an oily liquid and the papain. The invention of claim 2 is a face-wash characterized by comprising a cosmetic composition obtained by homogeneously blending papaya powder treated with papain as a protease having a proteolytic activity of at least 40,000 Pa.U.N./g and maca powder treated with said papain with substantially moisture-free powder or oily liquid and said papain, wherein said papain is obtained by purifying a secreted latex from an under-ripe papaya. The invention of claim 3 is a pack preparation characterized by comprising a cosmetic composition obtained by homogeneously blending papaya powder treated with papain as a protease having a proteolytic activity of at least 40,000 Pa.U.N./g and maca powder treated with said papain with a substantially

moisture-free powder or an oily liquid and said papain, wherein said papain is obtained by purifying a secreted latex from an under-ripe papaya. The invention of claim 4 is a bath preparation characterized by comprising a cosmetic composition obtained by homogeneously blending papaya powder treated with papain as a protease having a proteolytic activity of at least 40,000 Pa.U.N./g and maca powder treated with said papain with a substantially moisture-free powder or an oily liquid and said papain, wherein said papain is obtained by purifying a secreted latex from an under-ripe papaya.

Mode for carrying out the invention

The inventors of the present invention obtained a cosmetic composition containing papain, which was a protease that could provide a smooth touch to the skin surface. The composition could remove dirt on the epidermal surface (epidermal corneous layer) efficiently, without excessively removing essential proteins, and induced no deterioration of prophylactic or immunological functions against external excitation. In addition, the inventors made a diligent investigation to find a component that could be used with papain and that had skin beautifying properties. As a result, the inventors achieved the present invention through the experimental result that a cosmetic composition containing a combination of papain, papaya powder treated with papain, and cruciferous maca powder treated with papain as essential components had promise for beautifying the skin. This composition can realize the following functions and effects with one prescription:

Efficient removal of dirt on the epidermal surface (epidermal corneous layer) because of use of papain as a protease;

A reducing function to prevent diffusion of melanin pigments and an antioxidative potency to repress the biosynthesis reaction of melanin pigments, both of which properties are possessed by the papaya powder and the cruciferous maca powder; and

Prevention and amelioration of wrinkles to increase the elasticity and firmness of the skin, prevention and amelioration of flecks to increase the clearness of the skin, and prevention and amelioration of rough skin while increasing the moisture content of the skin.

Preferred examples are described below.

Papain as a protease used in the present invention is obtained by the following procedures. Secreted latex from an under-ripe fruit of a papaya (*Carica*

papaya L.), which is an evergreen tree belonging to the papaya family, is diluted by water and homogeneously blended. The blend is treated by first centrifugation (5000rpm), filter press dewatering, and then second centrifugation (10000rpm) after dewatering. Ultrafiltration, sterilizing filtration, and the like are follow the second centrifugation. Finally, the filtered result is freeze-dried. The freeze-dried papaya is pure (almost 100% by weight) papain without other ingredients and has a proteolytic activity of at least 40,000 Pa.U.N./g. When 1g of the papain in this example is precisely measured and dried at 105 degrees C for one hour, the weight loss of the dried papain is less than 10.0% in comparison with the weight of papain before drying, which is the degree of drying of the papain.

The raw papaya used for the present invention consists of the flesh and the pericarp of a papaya (*Carica papaya* L.) which is an evergreen tree belonging to the papaya family. The papaya powder is obtained by drying and powdering the flesh and the pericarp of the raw papaya. When 1g of the papaya powder in this example was precisely measured and dried at 105 degrees C for one hour, the weight loss of the dried powder was less than 10.0% in comparison with the weight of the powder before drying, which is the degree of dryness of the papaya powder before the papain treatment. The papaya powder contains skin beautifying ingredients such as asparaginic acid, serine, glycine, methionine, leucine, alanine, arginine, lysine, vitamin B1 (0.132mg per 100g of the papaya powder), vitamin B2 (0.034mg per 100g of the papaya powder), vitamin C (189.7mg per 100g of the papaya powder), beta-carotene (173.0 micrograms per 100g of the papaya powder), and vitamin P (1.190mg per 100g of the papaya powder). However, because of crude proteins, crude oils, and a mixture of them originally contained in the flesh and the pericarp of the raw papaya, some of the above skin beautifying ingredients are sealed off and prevented from contacting the skin. Therefore, the papaya powder before the papain treatment can not sufficiently exhibit its original ability to beautify the skin. In addition, because aqueous liquids such as water and ethanol reduce the potential of papain as a protease, the papaya powder must have been dried enough to be substantially free from aqueous liquids such as water and ethanol before the powder is blended with papain, in order to prevent a reduction in the potential of papain as a protease.

Before a cosmetic composition that is substantially moisture-free is manufactured, the following process is performed in order to blend papain with a

substantially moisture-free powder or an oily liquid: First, an aqueous solution containing 50% by weight of papain as a protease having a proteolytic activity of at least 40,000 Pa.U.N./g is prepared. Second, the solution containing 50% by weight of papain is sprayed onto the papaya powder so that the weight of sprayed solution onto the powder is 3.0% by weight based on the weight of the powder. Third, the sprayed papaya powder is mixed for one hour. Finally, the mixed powder is dried with heating at 40 degrees C, followed by drying with blown air. The papaya powder after the papain treatment can allow the skin beautifying ingredients which have been sealed off to adequately act on the skin. The degree of drying of the papaya powder after the treatment is similar to that of the papaya powder before the treatment, i.e., when 1g of the papaya powder after the treatment is precisely measured and dried at 105 degrees C for one hour, the weight loss of the dried powder is less than 10.0% of the weight of the powder before drying. Additionally, the proteolytic activity of the papaya powder after the treatment is undetectable, which means that no papain remains in the powder.

The raw maca used for the present invention consists of the axial root and the hypocotyl segment of a maca (*Lepidium Meyenii* Waip) which is a root crop of the lepidium genus belonging to the brassica family. The maca powder is obtained by drying and powdering the axial root and the hypocotyl segment of the raw maca. When 1g of the maca powder in this example is precisely measured and dried at 105 degrees C for one hour, the weight loss of the dried powder is less than 10.0% of the weight of the powder before drying, which is the degree of dryness of the maca powder before papain treatment. The maca powder contains skin beautifying ingredients such as flavonoid, tannin, saponin, albumin, asparaginic acid, serine, glycine, methionine, leucine, alanine, arginine, lysine, vitamin B1 (0.27mg per 100g of the papaya powder), vitamin B2 (0.28mg per 100g of the papaya powder), vitamin B6 (0.14mg per 100g of the papaya powder), Vitamin B12 (13.5micrograms per 100g of the papaya powder), vitamin C (2.50mg per 100g of the papaya powder), vitamin E, and zinc complexes, the ligands of which cannot yet be identified. However, because of crude proteins, crude oils, and a mixture of them which the axial root and the hypocotyl segment in the raw maca originally contain, some of the above skin beautifying ingredients are sealed off and prevented from contacting the skin. Therefore the maca powder before the papain treatment can not sufficiently exhibit its original ability to beautify the skin.

In the same manner as for the papaya powder, before a cosmetic composition that is substantially moisture-free is manufactured by blending papain with a substantially moisture-free powder or an oily liquid, the following process is performed. First, an aqueous solution containing 50% by weight of papain as a protease having a proteolytic activity of at least 40,000 Pa.U.N./g is prepared. Second, the solution containing 50% by weight of papain is sprayed onto the maca powder so that the weight of sprayed solution onto the powder is 3.0% by weight based on the weight of the powder. Third, the sprayed maca powder is mixed for one hour. Finally the mixed powder is dried by heating at 40 degrees C, followed by blowing with air. The maca powder after the papain treatment can allow the skin beautifying ingredients which have been sealed off to sufficiently act on the skin. The degree of drying of the maca powder after the treatment is similar to that of the maca powder before the treatment, i.e., when 1g of the maca powder after the treatment is precisely measured and dried at 105 degrees C for one hour, the weight loss of the dried powder is less than 10.0% in comparison with the weight of the powder before drying. Additionally, the proteolytic activity of the maca powder after the treatment is undetectable, which means that no papain remains in the powder.

The ingredients for beautifying the skin which the papaya powder and the maca powder contain have a reducing function to prevent diffusion of melanin pigments, an antioxidative potency to repress the biosynthesis reaction of melanin pigments, and functions to increase the activity of skin cells, to prevent skin dry, and to regulate the oil and moisture content of the skin. Although the ingredients have promise for beautifying the skin, the content of each is small and far from sufficient. In the present invention, the papaya powder and the maca powder are treated with papain so that the skin beautifying ingredients can work on the epidermis and the powders are blended with papain in a cosmetic composition. Because of these procedures, the efficiency of each of the skin beautifying ingredients increases and accordingly it is able to prevent and ameliorate wrinkles while increasing the elasticity and firmness of the skin, prevent and ameliorate flecks while increasing the clearness of the skin, and prevent and ameliorate rough skin while increasing the moisture content of the skin. The above findings are the basis of the present invention.

The cosmetic composition applied in the present invention can have any form as long as there is no deterioration of the proteolytic ability of papain before and after its preparation. When the content of papain in the final product is less

than 0.1% by weight, the above effects cannot be expected. On the other hand, when the content is more than 3.0% by weight, the reaction of papain is so strong that the damage of the skin becomes severe and produces adverse effects such as rough skin. Therefore, the preferred content of papain in the final product is from 0.1 to 3.0% by weight. If the content of papaya powder treated with papain in the final product is less than 0.1% by weight, the above functions cannot be expected. On the other hand, when the content is more than 3.0% by weight, hardly-soluble or insoluble substrates such as polysaccharides and fiber originally contained in the flesh and the pericarp of the raw papaya become perceptible in the final product. Therefore the preferred content of papaya powder treated with papain in the final product is from 0.1 to 3.0% by weight. When the content of maca powder treated with papain in the final product is less than 0.1% by weight, the above functions cannot be expected. On the other hand, when the content is more than 3.0% by weight, hardly-soluble or insoluble substrates such as polysaccharides and fiber originally contained in the axial root and the hypocotyl segment in the raw maca become perceptible in the final product. Therefore, the preferred content of maca powder treated with papain in the final product is from 0.1 to 3.0% by weight.

Examples

In order to ascertain the effects of the present invention, face-washes using the cosmetic composition of the present invention were prepared as Examples 1 to 3 and compared with Comparative Examples 1 to 4.

(1) Contents of the face-washes and manufacturing procedures

The contents of the face-washes of Examples 1 to 3 and Comparative Examples 1 to 4 are shown in Table 1 in Figure 1. More specifically, the face-washes of Examples 1 to 3 contained a combination of papain as a protease having a proteolytic activity of at least 40,000 Pa.U.N./g, papaya powder treated with papain by the above procedures, and maca powder treated with the papain in a similar manner to the papaya powder as essential components. The face-washes of Comparative Examples 1 and 2 contained the papaya powder treated with papain and the maca powder treated with papain but did not contain papain as a protease having a proteolytic activity of at least 40,000 Pa.U.N./g. The face-washes of Comparative Examples 3 and 4 contained papaya powder which was not treated with papain and maca powder which was not treated with papain and did not contain papain as a protease

having a proteolytic activity of at least 40,000 Pa.U.N./g. Because humidity reduces the proteolytic activity of papain, each component of the face-washes was a substantially moisture-free powder or an oily liquid. When 1g of each component was precisely measured and dried at 105 degrees C for one hour, the weight loss of the dried component was less than 10.0% in comparison with the weight of the component before drying, which was the degree of dryness of the component. Each face-wash was prepared by blending its components homogeneously.

(2) Test Method

35 women, each of whom had wrinkles, flecks (pigment spots), rough skin on the face, or had noticed a red glow on the face after a facial massage were randomly picked as test subjects. The subjects were divided into 7 groups of 5 members each, i.e., Group A, Group B, Group C, Group D, Group E, Group F, and Group G. The members of Group A used the face-wash of Example 1. The members of Group B used the face-wash of Example 2. The members of Group C used the face-wash of Example 3. The members of Group D used the face-wash of Comparative Example 1. The members of Group E used the face-wash of Comparative Example 2. The members of Group F used the face-wash of Comparative Example 3. The members of Group G used the face-wash of Comparative Example 4. Each face-wash was used twice a day, i.e., in the morning and in the night, and each usage was 1 g. The test period was 12 weeks. During this period, use of other cosmetics for skin beautification and vitamin A, vitamin C, vitamin E, female hormonal agents, and the like was prohibited. The alkali neutralization capacity of the skin, which is an indicator of the health of the skin was measured, and the degree of amelioration of the clearness of skin having flecks (pigment spots) was evaluated. The subjects were also surveyed with a questionnaire as to whether the red glow on the face after a facial massage changed and whether the condition of the skin after the test improved compared with the condition before the test.

(3) Results and analysis

The epidermal surface is normally acidic (pH: from 4.5 to 6.5). Accordingly, although the pH of the skin becomes alkali just after contact with a weak alkali solution, the pH of the epidermal surface returns to its original value in a matter of time, which is called the alkali neutralization capacity of the skin. This alkali neutralization capacity can evaluate whether the performance of the skin has decreased. The pH of the skin was measured at a measurement site

which had been previously selected for each examinee on the examinee's cheek with a glass electrode for planar measurement (contact solution: purified water). Specifically, a 1/60M disodium phosphate solution was applied to the cheek 6 times every 15 minutes, followed by measurement of the pH of the skin. The number of measurements was one time per examinee, and the result of a group was derived from the average of the results of all examinees in the group. The effect of the test could be evaluated by changes in pH, which was shown in a graph in which the number of coatings was on the horizontal axis and the change in the pH was on the vertical axis. Namely, when the change of the pH of the skin increased as the number of coatings increased, it showed that the alkali neutralization capacity of the skin was weak, which meant that performance of the skin was decreased. On the other hand, when the change in the pH was relatively small, it showed that the alkali neutralization capacity of the skin was strong and that performance of the skin remained good. The above results are shown in Table 2 in Figure 2 and in Figure 3 which plots the results shown in Table 2. Table 2 in Figure 2 and Figure 3 show that there was little difference in the change in pH of Comparative Examples 2 to 4 between before and after use of the face-washes, that the change in pH after use of the face-wash of Comparative Example 1 became slightly smaller than the change in pH before use, that the changes in pH after use of Example 2 and 3 became considerably smaller than the changes before use, and that the change in pH after use of Example 1 became remarkably smaller than the change before use.

The clearness of skin having pigment spots was evaluated by measuring a site on the cheek with a colorimeter (Minolta CR-300). A measurement site having pigment spots on the cheek of each examinee was previously specified. Measurement was performed 3 times, and the result of a group was derived from the average of the results of all examinees in the group. The results are shown in Table 3 in Figure 4. Numerical data in the table indicate the relative clearness, in which the color of the skin was assigned a score from 0 (black) to 100 (white). As shown in Table 3 in Figure 4, the results of the measurement of the relative clearness indicated that there were no changes in Comparative Examples 2 to 4 but that there were significant changes in other examples, and that the clearness of the skin increased in the following order: Comparative Example 1, Example 3, Example 2, and Example 1.

The results of the questionnaire concerning the change in a red glow on the face after a facial massage are shown in Table 4 in Figure 5. As shown in

Table 4 in Figure 5, all of the test subjects who used the face-washes of Examples 1 to 3 felt their symptoms disappear and three users who used the face-washes of Comparative Example 1 no longer felt a red glow.

The results of the questionnaire concerning the skin condition after the test in comparison with the condition before the test are shown in Table 5 in Figure 6. As shown in Table 5 in Figure 6, users who used the face-washes of Examples 1 to 3 felt an improvement in their skin and three users who used the face-washes of Comparative Example 1 felt an improvement in their skin.

The face-wash of Comparative Example 1 contained papaya powder treated with papain and maca powder treated with papain, although it did not contain papain. According to the above results, the face-wash of Comparative Example 1 had a skin beautifying effect slightly greater than that of Comparative Example 3 which contained neither papaya powder nor maca powder. This was because the papain treatment of the papaya powder and the maca powder made it possible for some skin beautifying ingredients, which had been sealed off by crude proteins, crude oils, and a mixture of them, to act on the skin. These sealed-off substances were contained in the flesh and the pericarp of the raw papaya and the axial root and the hypocotyl segment of the raw maca originally and had been prevented from contacting the skin. However, the skin beautifying effect was not enough in comparison with the face-washes of Examples 2 and 3 that had papain itself mixed therein.

In order to ascertain the effects of the present invention, pack preparations using the cosmetic composition of the present invention were prepared as Examples 4 to 6 and compared with Comparative Examples 5 to 8.

(1) Contents of the pack preparations and manufacturing procedures

The contents of the pack preparations of Examples 4 to 6 and Comparative Examples 5 to 8 are shown in Table 6 in Figure 7. More specifically, the pack preparations of Examples 4 to 6 contained a combination of papain as a protease having a proteolytic activity of at least 40,000 Pa.U.N./g, papaya powder treated with papain by the above procedures, and maca powder treated with the papain in a similar way to the papaya powder as essential components. The pack preparations of Comparative Examples 5 and 6 contained the papaya powder treated with papain and the maca powder treated with papain but did not contain papain as a protease having a proteolytic activity of at least 40,000 Pa.U.N./g. The pack preparations of Comparative Examples 7 and 8 contained papaya powder which was not treated with papain and maca powder which was

not treated with papain and did not contain papain as a protease having a proteolytic activity of at least 40,000 Pa.U.N./g. Because humidity reduces the proteolytic activity of papain, each component was a substantially moisture-free powder or an oily liquid. When 1g of each component of the pack preparations was precisely measured and dried at 105 degrees C for one hour, the weight loss of the dried component was less than 10.0% in comparison with the weight of the component before drying, which was the degree of dryness of the component. Each pack preparation was prepared by blending its components homogeneously.

(2) Means for evaluation

35 women, each of whom had wrinkles, flecks (pigment spots), rough skin on the face, or had noticed a red glow on the face after a facial massage were randomly picked up as test subjects. They were divided into 7 groups having 5 members, i.e., Group H, Group I, Group J, Group K, Group L, Group M, and Group O. The members of Group H used the pack preparation of Example 4. The members of Group I used the pack preparation of Example 5. The members of Group J used the pack preparation of Example 6. The members of Group K used the pack preparation of Comparative Example 5. The members of Group L used the pack preparation of Comparative Example 6. The members of Group M used the pack preparation of Comparative Example 7. The members of Group N used the pack preparation of Comparative Example 8. Each pack preparation was used once a day in the night, and each usage was 5 g. The test period was 12 weeks. The pack preparation was mixed with the same amount of lukewarm water and applied to the wet face for 5 minutes. During the test period, use of other cosmetics for skin beautification and vitamin A, vitamin C, vitamin E, female hormonal agents, and the like was prohibited. The alkali neutralization capacity of the skin, which is an indicator of the health of the skin was measured, and the degree of amelioration of the clearness of skin having flecks (pigment spots) was evaluated. The subjects also completed a survey in the form of a questionnaire concerning whether a red glow on the face after a facial massage changed and whether the condition of the skin after the test improved compared with the condition before the test.

(3) Results and analysis

The epidermal surface is normally acidic (pH: from 4.5 to 6.5). Accordingly, although the pH of the skin becomes alkali just after contact with weak a alkali solution, the pH of the epidermal surface returns to its original

value in a matter of time, which is called the alkali neutralization capacity of the skin. This alkali neutralization capacity can evaluate whether the performance of the skin has decreased. The pH of the skin was measured at a measurement site which had been previously selected for each examinee on the cheek with a glass electrode for planar measurement (contact solution: purified water). Specifically, a 1/60M disodium phosphate solution was applied to the cheek 6 times every 15 minutes, followed by measurement of the pH of the skin. The number of measurements was one time per examinee, and the result of a group was derived from the average of the results of all examinees in the group. The effect of the test could be evaluated from the change in pH, which was shown in a graph at which the number of coatings was on the horizontal axis and the change in pH was on the vertical axis. Namely, when the change in the pH of the skin increased as the number of coatings increased, it showed that the alkali neutralization capacity of the skin was weak, which meant that performance of the skin was decreased. On the other hand, when the change in pH was relatively small, it showed that the alkali neutralization capacity of the skin was strong and that performance of the skin remained good. The above results are shown in Table 7 in Figure 8 and in Figure 9, which plots results shown in Table 7. Table 7 in Figure 8 and Figure 9 show that there was little difference in the changes in pH of Comparative Examples 6 to 8 between before and after use of the pack preparations, that the change in pH after use of the pack preparation of Comparative Example 5 became slightly smaller than the change in pH before use, that the changes in pH after use of Examples 5 and 6 became considerably smaller than the changes in pH before use, and that the change in pH after use of Example 4 became remarkably smaller than the change in pH before use.

The clearness of skin having pigment spots was evaluated by measuring a site on the cheek with a colorimeter (Minolta CR-300). A measurement site having pigment spots on the cheek of each examinee was previously specified. Measurement was performed 3 times, and the result of a group was derived from the average of the results of all examinees in the group. The results are shown in Table 8 in Figure 10. Numerical data in the table indicate the relative clearness, in which the color of the skin was assigned a score from 0 (black) to 100 (white). As shown in Table 8 in Figure 10, the results of the measurement of the relative clearness indicate that there were no changes in Comparative Examples 6 to 8 but that there were significant changes in other examples, and that the clearness

of the skin increased in the following order: Comparative Example 5, Example 6, Example 5, and Example 4.

The results of the questionnaire concerning the change in a red glow on the face after a facial massage are shown in Table 9 in Figure 11. As shown in Table 9 in Figure 11, all of the test subjects who used the pack preparations of Examples 4 to 6 felt their symptoms disappear, and three users who used the pack preparations of Comparative Example 5 no longer felt a red glow.

The results of the questionnaire concerning the skin condition after the test in comparison with the condition before the test are shown in Table 10 in Figure 12. As shown in Table 10 in Figure 12, users who used the pack preparations of Examples 4 to 6 felt an improvement in their skin and three users who used the pack preparations of Comparative Example 5 felt an improvement in their skin.

The pack preparation of Comparative Example 5 contained papaya powder treated with papain and maca powder treated with papain, although it did not contain papain. According to the above results, the pack preparation of Comparative Example 5 had skin a beautifying effect slightly greater than that of Comparative Example 7 which contained neither papaya powder nor maca powder. This was because the papain treatment to the papaya powder and the maca powder made it possible for some skin beautifying ingredients, which had been sealed off by crude proteins, crude oils, and a mixture of them, to act on the skin. These sealing substances were contained in the flesh and the pericarp of the raw papaya and the axial root and the hypocotyl segment of the raw maca originally and had been prevented from contacting the skin. However, the skin beautifying effect was not enough in comparison with the pack preparations of Examples 5 and 6 that had papain itself mixed therein.

In order to ascertain the effects of the present invention, bath preparations using the cosmetic composition of the present invention were prepared as Examples 7 to 9 and compared with Comparative Examples 9 to 12.

(1) Contents of the bath preparations and manufacturing procedures

The contents of the bath preparations of Examples 7 to 9 and Comparative Examples 9 to 12 are shown in Table 11 in Figure 13. More specifically, the bath preparations of Examples 9 to 12 contained a combination of papain as a protease having a proteolytic activity of at least 40,000 Pa.U.N./g, papaya powder treated with papain by the above procedures and maca powder treated with the papain in a similar way to the papaya powder as essential

components. The bath preparations of Comparative Examples 9 and 10 contained the papaya powder treated with papain and the maca powder treated with papain but did not contain papain as a protease having a proteolytic activity of at least 40,000 Pa.U.N./g. The bath preparations of Comparative Examples 11 and 12 contained papaya powder which was not treated with papain and maca powder which was not treated with papain and did not contain papain as a protease having a proteolytic activity of at least 40,000 Pa.U.N./g. Because humidity reduces the proteolytic activity of papain, each component of the bath preparations was a substantially moisture-free powder or an oily liquid. When 1g of each component was precisely measured and dried at 105 degrees C for one hour, the weight loss of the dried component was less than 10.0% in comparison with the weight of the component before drying, which was the degree of dryness of the component. Each bath preparation was prepared by blending its components homogeneously.

(2) Means for evaluation

35 women, each of whom had wrinkles, flecks (pigment spots), rough skin on the face, or had noticed a red glow on the face after a facial massage were randomly picked as test subjects. They were divided into 7 groups having 5 members, i.e., Group O, Group P, Group Q, Group R, Group S, Group T, and Group U. The members of Group H used the bath preparation of Example 7. The members of Group I used the bath preparation of Example 8. The members of Group J used the bath preparation of Example 9. The members of Group K used the bath preparation of Comparative Example 9. The members of Group L used the bath preparation of Comparative Example 10. The members of Group M used the bath preparation of Comparative Example 11. The members of Group N used the bath preparation of Comparative Example 12. As a test method, 25g of the bath preparation were mixed into 180 to 200 L of warm water just before each subject bathed, and each bathing time was at least 10 minutes. The test period was set to 20 weeks. During the test period, use of other cosmetics for skin beautification and vitamin A, vitamin C, vitamin E, female hormonal agents, and the like was prohibited. The alkali neutralization capacity of the skin, which is an indicator of the health of the skin was measured, and the degree of amelioration of the clearness of the skin having flecks (pigment spots) was evaluated. The subjects also completed a survey in the form of a questionnaire concerning how the condition of the skin after the test improved in comparison with the condition before the test.

(3) Results and analysis

The epidermal surface is normally acidic (pH: from 4.5 to 6.5). Accordingly, although the pH of the skin becomes alkali just after contact with a weak alkali solution, the pH of the epidermal surface returns to its original value in a matter of time, which is called the alkali neutralization capacity of the skin. This alkali neutralization capacity can evaluate whether the performance of the skin has decreased. The pH of the skin was measured at a measurement site which had been previously selected for each examinee on the the cheek with a glass electrode for planar measurement (contact solution: purified water). Specifically, a 1/60M disodium phosphate solution was applied to the cheek 6 times every 15 minutes, followed by measurement of the pH of the skin. The number of measurements was one time per examinee, and the result of a group was derived from the average of the results of all examinees in the group. The effect of the test could be evaluated from the t changes in pH, which is shown in a graph in which the number of coatings is on the horizontal axis and the change in pH is on the vertical axis. Namely, when the change in pH of the skin increased as the number of coatings increased, it showed that the alkali neutralization capacity of the skin was weak, which meant that performance of the skin was decreased. On the other hand, when the change in pH was relatively small, it showed that the alkali neutralization capacity of the skin was strong and that performace of the skin remained good. The above results are shown in Table 12 in Figure 14 and in Figure 15, which plots the results shown in Table 12. Table 12 in Figure 14 and Figure 15 indicate that there was little difference in the changes in pH of Comparative Examples 10 to 12 between before and after use of the bath preparations, that the change in pH after use of the bath preparation of Comparative Example 9 became slightly smaller than the change in pH before use, that the changes in pH after use of Examples 8 and 9 became considerably smaller than the changes in pH before use, and that the pH change after use of Example 7 became remarkably smaller than the change in pH before use.

The clearness of skin having pigment spots was evaluated by measuring a site on the cheek with a colorimeter (Minolta CR-300). A measurement site having pigment spots on the cheek of each examinee was previously specified. Measurement was performed 3 times, and the result of a group was derived from the average of the results of all examinees in the group. The results are shown in Table 13 in Figure 16. Numerical data in the table indicate the relative clearness,

in which the color of the skin was assigned a score from 0 (black) to 100 (white). As shown in Table 13 in Figure 16, the results of the measurement of the relative clearness indicated that there were no changes in Comparative Examples 10 to 12 but that there was a slight improvement in the change in Comparative Example 9, and that the clearness of the skin increased in the order of Example 9, Example 8, and Example 7, although the degree of improvement was less than in the test of face-washes and pack preparations.

The results of the questionnaire concerning the skin condition after the test in comparison with the condition before the test are shown in Table 14 in Figure 17. As shown in Table 14 in Figure 17, test subjects who used the bath preparations of Examples 7 to 9 felt an improvement in their skin and two users who used the bath preparations of Comparative Example 9 felt an improvement in their skin.

The bath preparation of Comparative Example 9 contained papaya powder treated with papain and maca powder treated with papain, although the bath preparation did not contain papain. According to the above results, the bath preparation of Comparative Example 9 had a skin beautifying effect slightly greater than that of Comparative Example 11 which contained neither papaya powder nor maca powder. This was because the papain treatment to the papaya powder and the maca powder made it possible for some skin beautifying ingredients, which had been sealed off by crude proteins, crude oils, and a mixture of them, to act on the skin. These sealed-off substances were originally contained in the flesh and the pericarp of the raw papaya and the axial root and the hypocotyl segment of the raw maca and had been prevented from contacting the skin. However, the skin beautifying effect was not enough in comparison with the bath preparations of Examples 8 and 9 that had papain itself mixed therein.

In this way, it was experimentally verified that a cosmetic composition and a face-wash, a pack preparation, and a bath preparation each comprising the composition of the present invention, which contains papaya powder treated with papain as a protease having a proteolytic activity of at least 40,000 Pa.U.N./g, maca powder treated with the papain, and the papain, has the skin beautifying effect of papain which efficiently removes dirt on the epidermal surface (epidermal corneous layer) and a synagetic effect of papaya powder and maca both of which contain the skin beautifying ingredients, and that the composition and products comprising it can promote the user's skin health and contribute to skin beautification such as by preventing and ameliorating wrinkles,

flecks (pigment spots) and rough skin due to the above components. Although the effect of a face-wash, the effect of a pack preparation, and the effect of a bath preparation were independently evaluated in the above experiments in the examples, it is needless to say that simultaneous use of a face-wash, a pack preparation, and a bath preparation is allowed and that the simultaneous use produces a more definite effect. In actual use, simultaneous use of cosmetics of a multi-formula type is more effective.

The present invention is not limited by the above examples as long as the characteristics of the present invention are not impaired. For instance, the composition of the present invention can obviously be applied to a body shampoo, a hair shampoo, and the like in addition to a face-wash, a pack preparation, and a bath preparation. Because humidity deteriorates the function of papain as a protease, the substrate of cosmetics can be anything when it is a substantially moisture-free powder or an oily liquid. Although it is inevitable that every component including papain will adsorb a small amount of water, if necessary, a proper process such as drying can be performed on the powder or the oily liquid before obtaining the cosmetic composition which is substantially moisture-free so that papain will not contact with water. When 1g of the powder or the oily liquid is precisely measured and dried at 105 degrees C for one hour, it is preferred that the weight loss of the dried powder or oily liquid be less than 10.0% in comparison with the weight of the powder or the oily liquid before drying.

Effects of the invention

As described above, when the cosmetic composition of the present invention is applied to a face-wash, a pack preparation, a bath preparation, and the like, the products can promote the user's skin health and contribute to beautifying the skin such as by preventing and ameliorating wrinkles, flecks (pigment spots) and rough skin, due to the skin beautifying effect of papain which efficiently removes dirt on the epidermal surface (epidermal corneous layer) and the synergetic effect of papaya powder and maca both of which contain skin beautifying ingredients. Even though this composition is one recipe, it has the effects of efficiently removing dirt on the epidermal surface (epidermal corneous layer), without excessively removing essential proteins, of inducing no deterioration of prophylactic or immunological functions against external excitation, and of providing a skin beautifying effect.

Brief description of the drawings

Figure 1 indicates Table 1 which is a table showing the contents of Examples 1 to 3, which are cases in which the present invention is applied to face-washes, and the contents of Comparative Examples 1 to 4.

Figure 2 indicates Table 2 which is a Table showing the change in the alkali neutralization capacity of the skin by face-washes of Examples of the present invention and comparative examples.

Figure 3 is a graph of the contents of Table 2.

Figure 4 indicates Table 3 which is a table showing the change in the clearness of the skin measured by a colorimeter produced by face-washes of examples of the present invention and comparative examples.

Figure 5 indicates Table 4 which is a table showing the change in "red glow" produced by face-washes of examples of the present invention and comparative examples.

Figure 6 indicates Table 5 which is a table showing the change in "the skin condition" produced by face-washes of examples of the present invention and comparative examples.

Figure 7 indicates Table 6 which is a table showing the contents of Examples 4 to 6 which are cases in which the present invention is applied to pack preparations, and the contents of Comparative Examples 5 to 8.

Figure 8 indicates Table 7 which is a table showing the change in the alkali neutralization capacity of the skin produced by pack preparations of examples of the present invention and comparative examples.

Figure 9 is a graph of the results shown in Table 7.

Figure 10 indicates Table 8 which is a table showing the change in the clearness of the skin measured by a colorimeter produced by pack preparations of examples of the present invention and comparative examples.

Figure 11 indicates Table 9 which is a table showing the change in "red glow" produced by pack preparations of examples of the present invention and comparative examples.

Figure 12 indicates Table 10 which is a table showing the change in "the skin condition" produced by pack preparations of examples of the present invention and comparative examples.

Figure 13 indicates Table 11 which is a table showing the contents of Examples 7 to 9 which are cases in which the present invention is applied to bath preparations, and the contents of Comparative Examples 9 to 12.

Figure 14 indicates Table 12 which is a table showing the change in the alkali neutralization capacity of the skin produced by bath preparations of examples of the present invention and comparative examples.

Figure 15 is a graph of the results shown in Table 12.

Figure 16 indicates Table 13 which is a table showing the change in the clearness of the skin measured by a colorimeter produced by bath preparations of examples of the present invention and comparative examples.

Figure 17 indicates Table 14 which is a table showing the change in "the skin condition" produced by bath preparations of examples of the present invention and comparative examples.

Figure 1

Table 1 The contents of face-washes of Examples 1 to 3 and Comparative Examples 1 to 4 (unit: %by weight)

Example 1 Example 2 Example 3 Comparative Example 1 Comparative Example 2 Comparative Example 3 Comparative Example 4

組成	実施例 1	実施例 2	実施例 3	比較例 1	比較例 2	比較例 3	比較例 4
マンニトール	50.0	50.0	50.0	50.0	50.0	50.0	50.0
石けん素地	30.0	30.0	30.0	30.0	30.0	30.0	30.0
カオリン	10.0	10.0	10.0	10.0	10.0	10.0	10.0
タルク	3.0	8.0	6.9	7.0	8.8	7.0	8.8
オリーブ油	1.0	1.0	1.0	1.0	1.0	1.0	1.0
パパイン	2.0	1.0	0.1	—	—	—	—
パパイヤ末	2.0,*1	1.0,*1	1.0,*1	1.0,*1	0.1,*1	1.0	0.1
マカ末	2.0,*2	1.0,*2	1.0,*2	1.0,*2	0.1,*2	1.0	0.1
合計	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Component
mannitol
soap base
kaolin
talc
olive oil
papain
papaya powder
maca powder
sum

[*1]印はパパインにより処理したパパイヤ末、無印はパパインによる処理をしないパパイヤ末。

[*2]印はパパインにより処理したマカ末、無印はパパインによる処理をしないマカ末。

[*1] : A papaya powder with 1* was treated by papain, while that without 1* was not treated by papain.

[*2] : A maca powder with 2* was treated by papain, while that without 2* was not treated by papain.

Figure2

Table 2 The change in the alkali neutralization capacity of the skin by face-washes of the present invention

Examinee Test The change in pH in the skin 1st application 2nd application 3rd application 4th application 5th application 6th application

Group A Example 1

Group B Example 2

Group C Example 3

Group D Comp. Example 1

Group E Comp. Example 2

Group F Comp. Example 3

Group G Comp. Example 4

表2 本発明の洗顔剤による皮膚のアルカリ中和能の変化

被験者	試験	塗布1回目	塗布2回目	塗布3回目	塗布4回目	塗布5回目	塗布6回目
Aグループ 実施例1	前	+0.95	+1.51	+1.80	+2.10	+2.21	+2.30
	後	+0.56	+0.89	+1.02	+1.11	+1.17	+1.15
Bグループ 実施例2	前	+0.95	+1.51	+1.90	+2.10	+2.21	+2.30
	後	+0.69	+1.08	+1.23	+1.31	+1.36	+1.35
Cグループ 実施例3	前	+0.95	+1.51	+1.80	+2.10	+2.21	+2.30
	後	+0.73	+1.20	+1.40	+1.53	+1.59	+1.59
Dグループ 比較例1	前	+0.95	+1.51	+1.90	+2.10	+2.21	+2.30
	後	+0.78	+1.30	+1.60	+1.82	+1.93	+2.01
Eグループ 比較例2	前	+0.95	+1.51	+1.90	+2.10	+2.21	+2.30
	後	+0.94	+1.46	+1.88	+2.03	+2.15	+2.28
Fグループ 比較例3	前	+0.95	+1.51	+1.90	+2.10	+2.21	+2.30
	後	+0.92	+1.54	+1.92	+2.07	+2.20	+2.32
Gグループ 比較例4	前	+0.95	+1.51	+1.90	+2.10	+2.21	+2.30
	後	+0.92	+1.53	+1.93	+2.05	+2.17	+2.29

Before After

Figure 3

The graph of the contents of Table 2

表2をグラフにした図

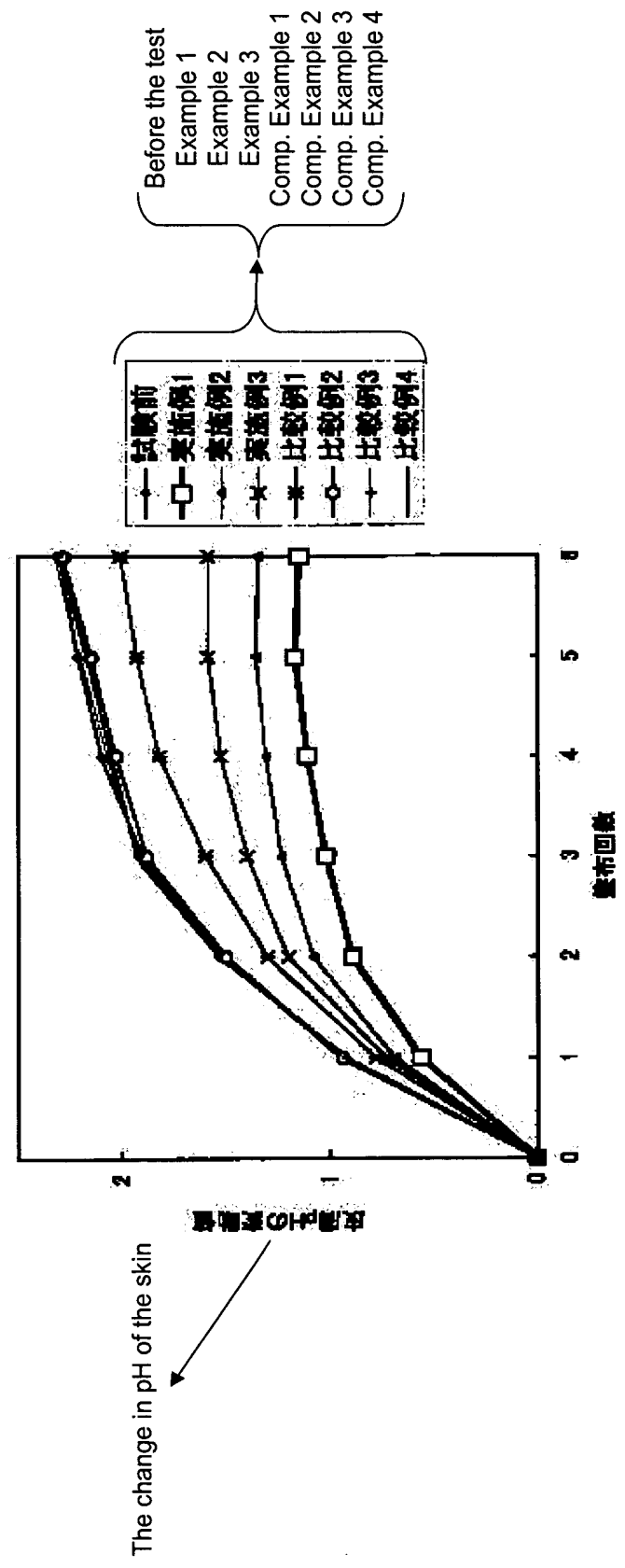


Figure 4

Table 3 The change in the clearness of the skin measured by a colorimeter produced by face-washes of the present invention

表3 本発明の洗顔剤による色彩色差計による皮膚明度の変化

被験者	試験	色彩色差計 皮膚明度測定値	変化値
Aグループ 実施例1	前	54.28	1.46
	後	55.74	
Bグループ 実施例2	前	54.28	1.19
	後	55.47	
Cグループ 実施例3	前	54.28	0.83
	後	55.11	
Dグループ 比較例1	前	54.28	0.37
	後	54.65	
Eグループ 比較例2	前	54.28	0.03
	後	54.31	
Fグループ 比較例3	前	54.28	0.05
	後	54.33	
Gグループ 比較例4	前	54.28	0.03
	後	54.31	

Examinee Test The value of the clearness The difference

Group A Example 1
Group B Example 2
Group C Example 3
Group D Comp. Example 1
Group E Comp. Example 2
Group F Comp. Example 3
Group G Comp. Example 4

Before
After

Figure 5

Table 4 The change in "red glow" produced by face-washes of the present invention

Examinee Test The number of persons who felt a red glow The number of persons who felt an improvement

表4 本発明の洗顔剤による「ほてり感」の変化

被験者	試験	「ほてり感」の自覚のある人の人数	消失人数
Aグループ 実施例1	前	5	5
	後	0	
Bグループ 実施例2	前	5	5
	後	0	
Cグループ 実施例3	前	5	5
	後	0	
Dグループ 比較例1	前	5	3
	後	2	
Eグループ 比較例2	前	5	0
	後	5	
Fグループ 比較例3	前	5	0
	後	5	
Gグループ 比較例4	前	5	0
	後	5	

Group A Example 1 Group B Example 2 Group C Example 3 Group D Comp. Example 1 Group E Comp. Example 2 Group F Comp. Example 3 Group G Comp. Example 4

Before After

Figure 6

Table 5 The change in "the skin condition" produced by face-washes of the present invention

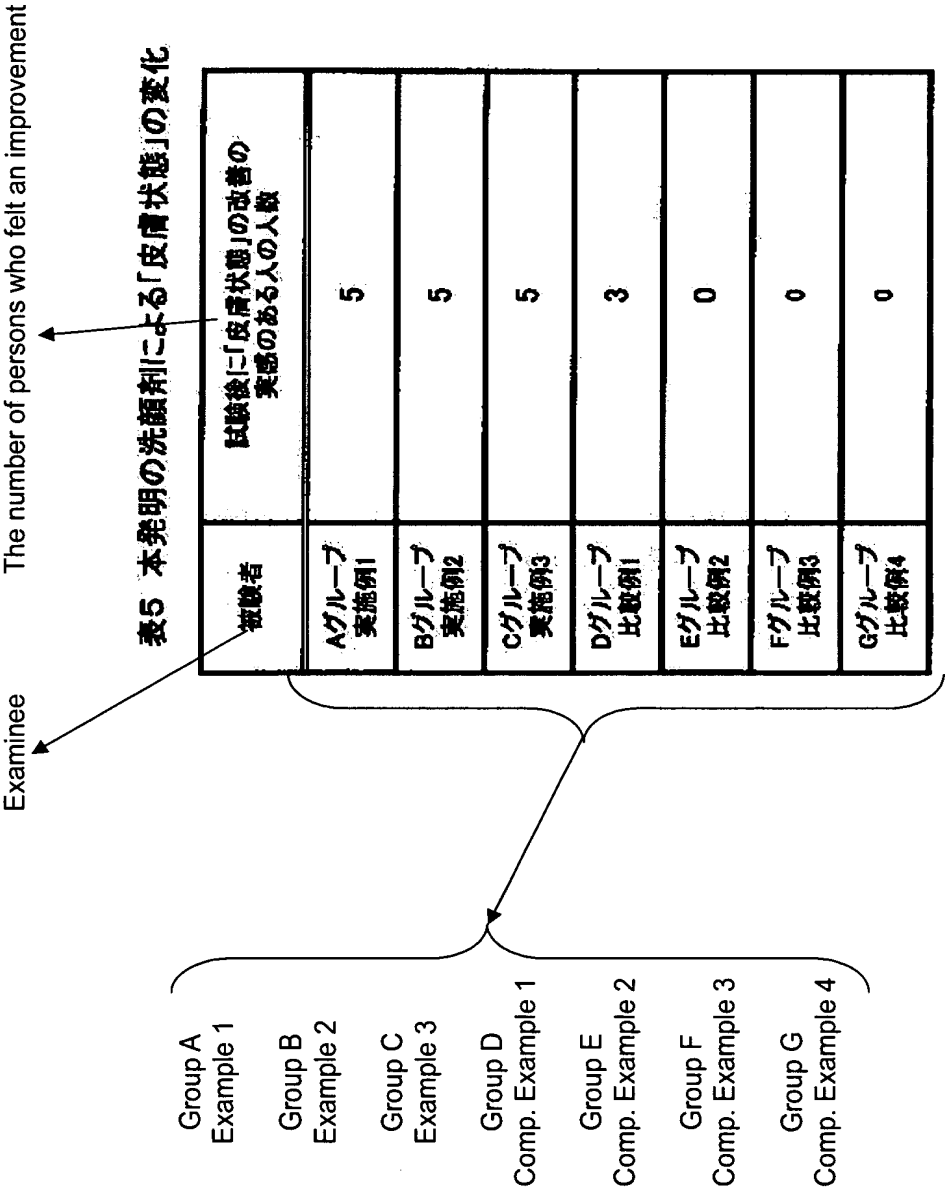


Figure 7

Table 6 The contents of pack preparations of Examples 4 to 6 and Comparative Examples 5 to 8 (unit: %by weight)

Example 4 Example 5 Example 6 Comparative Example 5 Comparative Example 6 Comparative Example 7 Comparative Example 8

表 6 実施例 4 から 6、及び、比較例 5 から 8 のパップ剤の成分組成 (単位: 重量%)

組成	実施例 4	実施例 5	実施例 6	比較例 5	比較例 6	比較例 7	比較例 8
ベントナイト	40.0	40.0	40.0	40.0	40.0	40.0	40.0
カオリン	40.0	40.0	40.0	40.0	40.0	40.0	40.0
マンニトール	10.0	10.0	10.0	10.0	10.0	10.0	10.0
タルク	3.0	6.0	6.9	7.0	8.8	7.0	8.8
オリーブ油	1.0	1.0	1.0	1.0	1.0	1.0	1.0
パパイン	2.0	1.0	0.1	—	—	—	—
パパイヤ末	2.0,*1	1.0,*1	1.0,*1	1.0,*1	0.1,*1	1.0	0.1
マカ末	2.0,*2	1.0,*2	1.0,*2	1.0,*2	0.1,*2	1.0	0.1
合計	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[*1] 印はパパインにより処理したパパイヤ末、無印はパパインによる処理をしないパパイヤ末。
 [*2] 印はパパインにより処理したマカ末、無印はパパインによる処理をしないマカ末。

[*1] : A papaya powder with 1* was treated by papain, while that without 1* was not treated by papain.
 [*2] : A maca powder with 2* was treated by papain, while that without 2* was not treated by papain.

Figure 8

Table 7 The change in the alkali neutralization capacity of the skin by pack preparations of the present invention

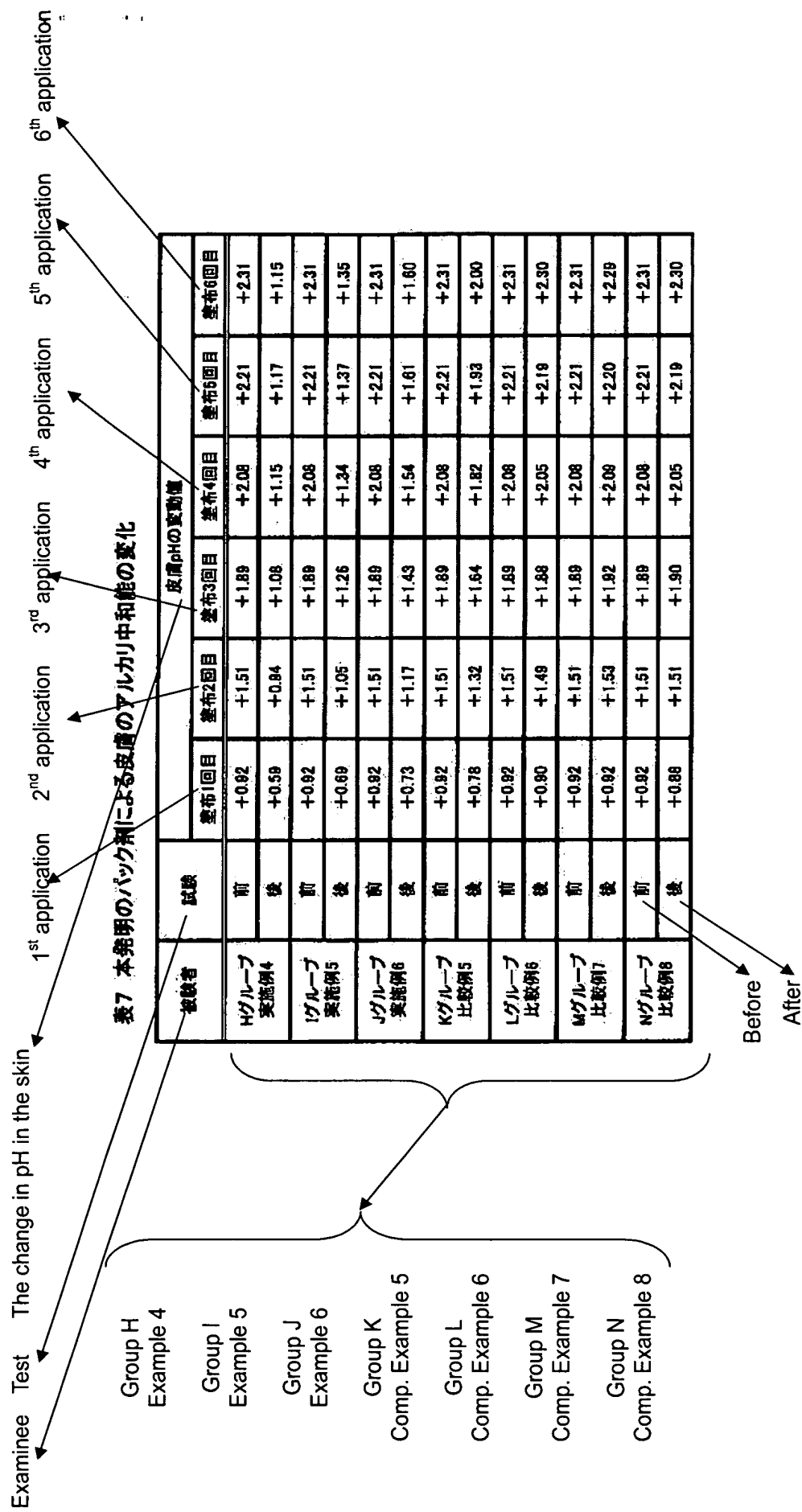


Figure 9

The graph of the contents of Table 7

表7をグラフにした図

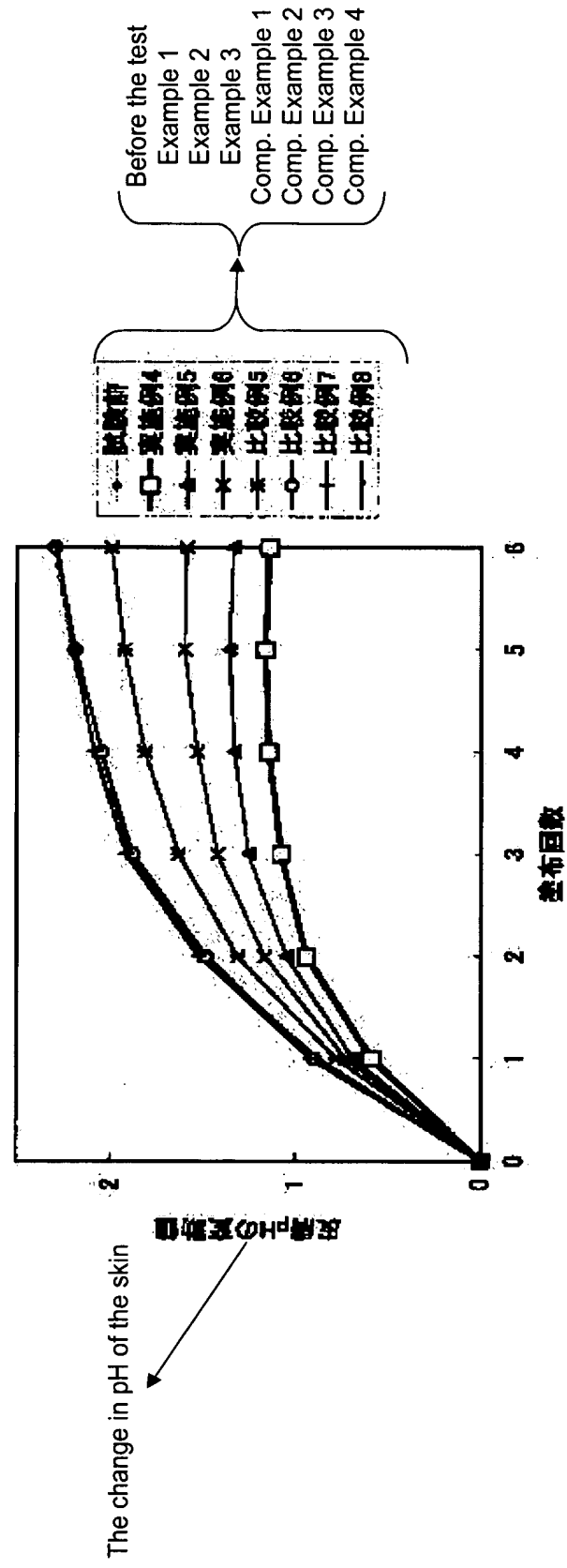


Figure 10

Table 8 The change in the clearness of the skin measured by a colorimeter produced by pack preparations of the present invention

Examinee Test The value of the clearness The difference

表8 本発明のパック剤による色彩色差計による皮膚明度の変化

被験者	試験	色彩色差計 皮膚明度測定値	変化値
Hグループ 実施例4	前	54.24	1.32
	後	55.56	
Iグループ 実施例5	前	54.24	1.07
	後	55.31	
Jグループ 実施例6	前	54.24	0.77
	後	55.01	
Kグループ 比較例5	前	54.24	0.38
	後	54.62	
Lグループ 比較例6	前	54.24	0.04
	後	54.28	
Mグループ 比較例7	前	54.24	0.01
	後	54.25	
Nグループ 比較例8	前	54.24	0.03
	後	54.27	

Group H Example 4
Group I Example 5
Group J Example 6
Group K Comp. Example 5
Group L Comp. Example 6
Group M Comp. Example 7
Group N Comp. Example 8

Before
After

Figure 11

Table 9 The change in "red glow" produced by pack preparations of the present invention

Examinee Test The number of persons who felt a red glow The number of persons who felt an improvement

表9 本発明のバック剤による「ほてり感」の変化

被験者	試験	「ほてり感」の自覚のある人の人数	消失人数
Hグループ 実施例4	前	5	5
	後	0	
Iグループ 実施例5	前	5	5
	後	0	
Jグループ 実施例6	前	5	5
	後	0	
Kグループ 比較例5	前	5	3
	後	2	
Lグループ 比較例6	前	5	0
	後	5	
Mグループ 比較例7	前	5	0
	後	5	
Nグループ 比較例8	前	5	0
	後	5	

Group H Example 4 Group I Example 5 Group J Example 6 Group K Comp. Example 5 Group L Comp. Example 6 Group M Comp. Example 7 Group N Comp. Example 8

Before After

Figure 12

Table 10 The change in "the skin condition" produced by pack preparations of the present invention

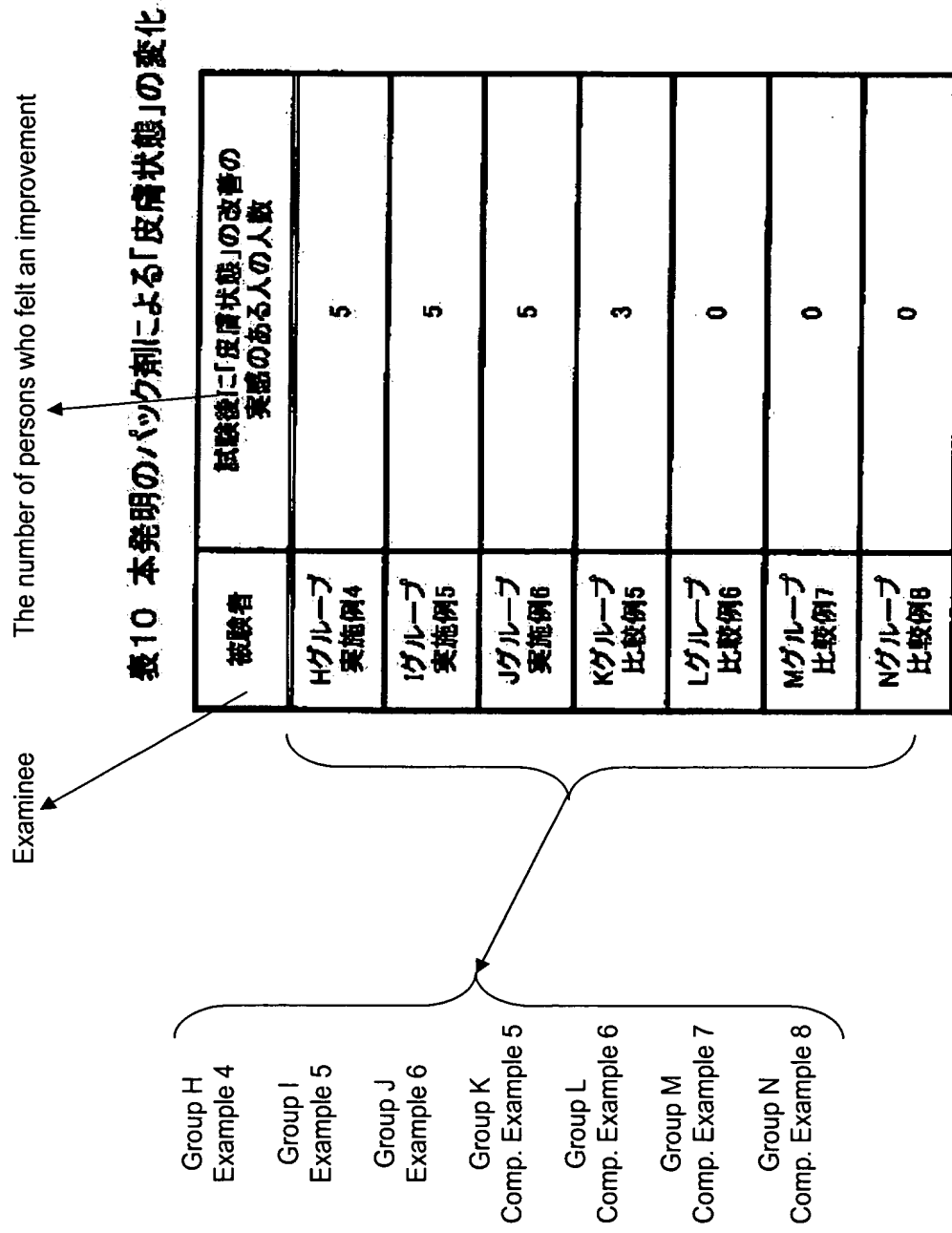


Figure 13

Table 11 The contents of bath preparations of Examples 7 to 9 and Comparative Examples 9 to 12 (unit: %by weight)
Example 7 Example 8 Example 9 Comparative Example 9 Comparative Example 10 Comparative Example 11 Comparative Example 12

表 11 実施例 7 から 9、及び、比較例 9 から 12 の浴剤の成分組成 (単位: 重量%)

組成	実施例 7	実施例 8	実施例 9	比較例 9	比較例 10	比較例 11	比較例 12
炭酸水素ナトリウム	93.0	96.0	98.9	97.0	98.8	97.0	98.8
オリーブ油	1.0	1.0	1.0	1.0	1.0	1.0	1.0
パパイン	2.0	1.0	0.1	—	—	—	—
パパイヤ末	2.0,*1	1.0,*1	1.0,*1	1.0,*1	0.1,*1	1.0	0.1
マカ末	2.0,*2	1.0,*2	1.0,*2	1.0,*2	0.1,*2	1.0	0.1
合計	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[*1]印はパパインにより処理したパパイヤ末、無印はパパインによる処理をしないパパイヤ末。
[*2]印はパパインにより処理したマカ末、無印はパパインによる処理をしないマカ末。

[*1]: A papaya powder with 1* was treated by papain, while that without 1* was not treated by papain.
[*2]: A maca powder with 2* was treated by papain, while that without 2* was not treated by papain.

Figure 14

Table 12

The change in the alkali neutralization capacity of the skin by bath preparations of the present invention

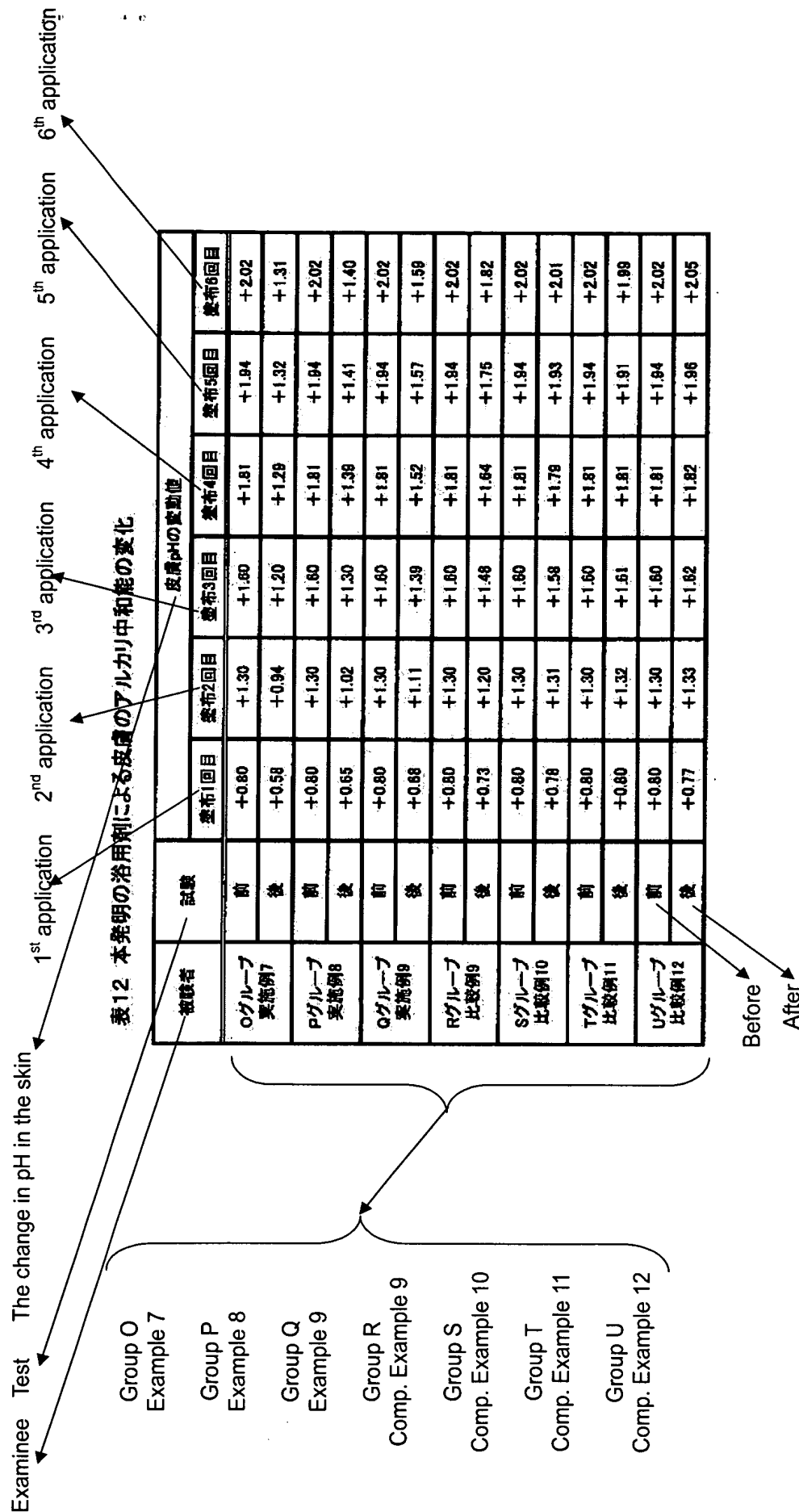


Figure 15

The graph of the contents of Table 12

表12をグラフにした図

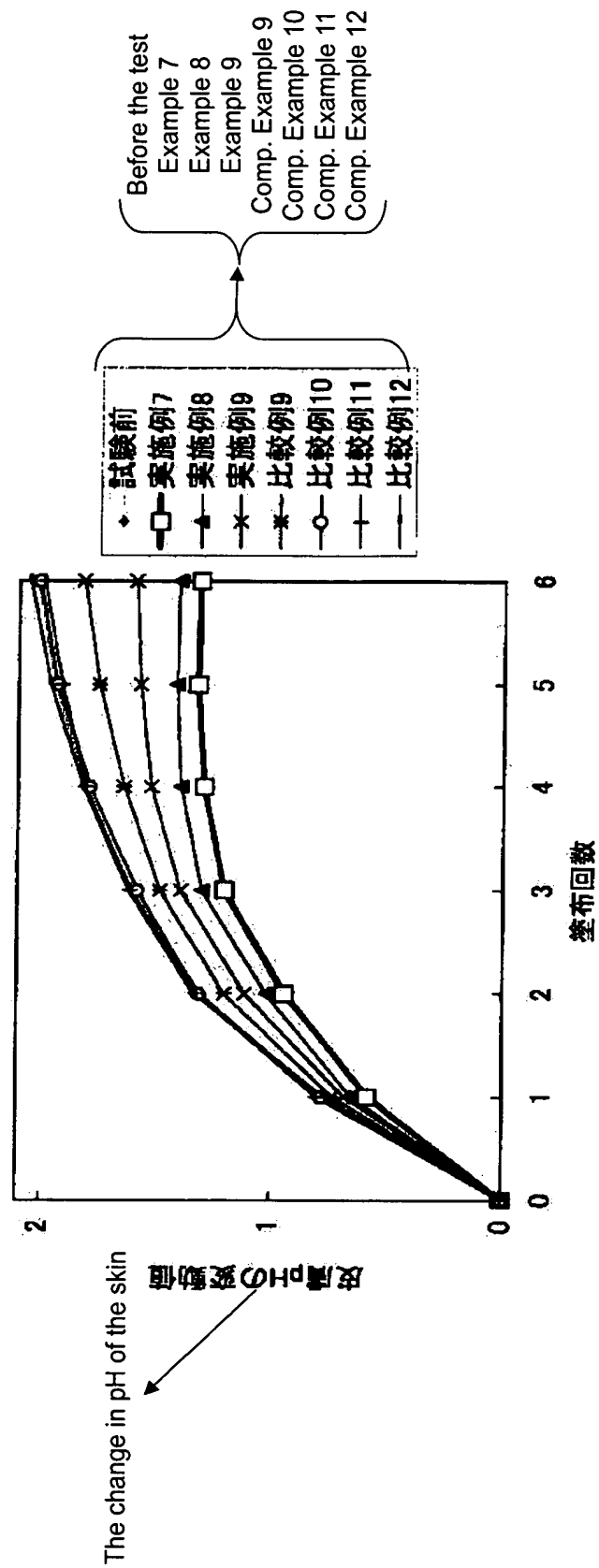


Figure 16

Table 13 The change in the clearness of the skin measured by a colorimeter produced by bath preparations of the present invention

Examinee Test The value of the clearness The difference

表13 本発明の浴用剤による色彩色差計による皮膚明度の変化

被験者	試験	色彩色差計 皮膚明度測定値	変化値
Oグループ 実施例7	前	53.45	0.76
	後	54.21	
Pグループ 実施例8	前	53.45	0.52
	後	53.97	
Qグループ 実施例9	前	53.45	0.37
	後	53.82	
Rグループ 比較例9	前	53.45	0.21
	後	53.66	
Sグループ 比較例10	前	53.45	0.02
	後	53.47	
Tグループ 比較例11	前	53.45	0.02
	後	53.47	
Uグループ 比較例12	前	53.45	0.03
	後	53.48	

Group O Example 7
Group P Example 8
Group Q Example 9
Group R Comp. Example 9
Group S Comp. Example 10
Group T Comp. Example 11
Group U Comp. Example 12

Before
After

Figure 17

Table 14 The change in "the skin condition" produced by bath preparations of the present invention

